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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 09/615,233      | 07/13/2000  | ICHIRO KASAI         | 15162/02080         | 4352             |

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2673

DATE MAILED: 05/08/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

|                                      |                                     |
|--------------------------------------|-------------------------------------|
| Application No.<br><b>09/615,233</b> | Applicant(s)<br><b>Kasai et al.</b> |
| Examiner<br><b>David L. Lewis</b>    | Art Unit<br><b>2673</b>             |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1)  Responsive to communication(s) filed on Apr 24, 2003.
- 2a)  This action is FINAL. 2b)  This action is non-final.
- 3)  Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

### Disposition of Claims

- 4)  Claim(s) 1 and 3-13 is/are pending in the application.
- 4a) Of the above, claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5)  Claim(s) \_\_\_\_\_ is/are allowed.
- 6)  Claim(s) 1 and 3-13 is/are rejected.
- 7)  Claim(s) \_\_\_\_\_ is/are objected to.
- 8)  Claims \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9)  The specification is objected to by the Examiner.
- 10)  The drawing(s) filed on \_\_\_\_\_ is/are a)  accepted or b)  objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11)  The proposed drawing correction filed on \_\_\_\_\_ is: a)  approved b)  disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12)  The oath or declaration is objected to by the Examiner.

### Priority under 35 U.S.C. §§ 119 and 120

- 13)  Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a)  All b)  Some\* c)  None of:  
1.  Certified copies of the priority documents have been received.  
2.  Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3.  Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \*See the attached detailed Office action for a list of the certified copies not received.
- 14)  Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).  
a)  The translation of the foreign language provisional application has been received.
- 15)  Acknowledgement is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

### Attachment(s)

- 1)  Notice of References Cited (PTO-892)
- 2)  Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3)  Information Disclosure Statement(s) (PTO-1449) Paper No(s). \_\_\_\_\_
- 4)  Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 5)  Notice of Informal Patent Application (PTO-152)
- 6)  Other: \_\_\_\_\_

**Title: Image Display Apparatus**

**DETAILED ACTION**

***Claim Rejections - 35 U.S.C. § 102***

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.
2. **Claims 1, 3, 7-11 are rejected under 35 U.S.C. 102(b) as being anticipated by Okamura (5601352).**
3. **As in claim 1, Okamura teaches of a head-mounted image display apparatus comprising: an image display element, figure 4 item 3-5; a projection optical system that projects an image displayed by said image display element, figure 4 item 6; a screen on which the image projected by said projection optical system is imaged, figure 4 item 7; and a combiner disposed between said projection optical system and said screen, wherein said combiner transmits image light and directs it to said screen, and reflects the image light reflected at the screen, figure 4 item 15, while simultaneously transmitting external light, column 6 lines 42-60.**

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4. **As in claim 11, Okamura teaches** of a head-mounted image display apparatus comprising: an image display element, **figure 4 item 3-5**; a projection optical system that projects an image displayed by said image display element, **figure 4 item 6**; a screen onto which the image is projected by said projection optical system, **figure 4 item 7**; and a combiner that reflects image light reflected at said screen, and simultaneously transmits external light, **figure 4 item 15, column 6 lines 42-60**. Wherein external light enters and leaves the system via shutter 16 of figure 4 while the system is in operation, such that the combiner or half mirror 15 also receives external light. **As in claim 12, Okamura teaches** wherein said combiner further transmits image light from said projection optical system and directs it to said screen, **column 6 lines 42-60**.
  
5. **As in claim 3, Okamura teaches** wherein said screen is disposed above or below a user's pupil, **figure 4 item 7**. **As in claims 7 and 8, Okamura teaches** wherein said image display apparatus has a plurality of units each including said image display element and said projection optical system, **figure 4 items 3-5**, and **figure 6 items 16a and 16b**. **As in claim 9, Okamura teaches** wherein said screen has a retro reflection characteristic, **figure 4 item 7**. **As in claim 10, Okamura teaches** wherein said combiner is a half mirror or a polarization separation member, **figure 4 item 15, column 6 lines 42-60**.

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***Claim Rejections - 35 U.S.C. § 103***

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. **Claims 4-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Okamura (5601352) in view of Hanano (6185045).**
8. **As in claim 4-6, Okamura is silent as to further comprising an eyepiece optical system disposed between said combiner and the user, wherein said eyepiece optical system enlarges the image projected onto said screen, and an optical element disposed on an external side of said combiner with respect to said eyepiece optical system, said system having a composite optical power of substantially zero. Hanano teaches of said eyepiece, figure 9 item 13, and Okamura teaches of said external optical element, figure 4 item 16. As illustrated by the image display devices in Okamura, figure 4, and Hanano, figure 9, both devices assigned to the same assignee, Olympus Optical Co., Ltd, they teaches of like systems who's features would be interchangeably and readily combinable by the skilled artisan wherein the eyepiece of Hanano could be added to the head mounted image display apparatus**

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of Okamura to enhanced the system based on known features on a like device, wherein given that external images or light can be seen through the device optical system with no additional optical power, thereby viewing the computer generated video superimposed onto the real world environment, said system inherently has an optical power close to zero, for the purpose of having no strain on the eye while viewing real and generated images simultaneously. In optics parallel light is said to have zero optical power. As shown in figure 9, Hanano teaches of parallel light reaching the Eyeball.

9. **Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Okamura (5601352) in view of Hanano (6185045), further in view of Travers et al. (6150998) and Suzuki et al. (5537092).**
10. **As in claim 13, Okamura teaches of a head piece adapted to be worn on a head of a wearer, the head of the wearer having a face, the head piece, figure 7, comprising: a hood, said hood adapted to be positioned on the had of the wearer, figure 7; a visor having a first end and a second end, said first end of said visor rotatably mounted to said hood such that said visor rotates from a first position, substantially covering the face of the wearer, to second position not substantially covering the face of the wearer, figure 7 item 13, wherein said visor inherently teaches of said first and second positions for allowing said hood to be fit one said wearers head; an image display apparatus comprising: an image display element, figure 4 item 3-5; a projection optical system that projects an**

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image displayed by said image display element, **figure 4 item 6**; a screen onto which the image is projected by said projection optical system, **figure 4 item 7**; and a combiner that reflects image light reflected at said screen, and transmits external light, **figure 4 item 15, column 6 lines 42-60**, an optical element disposed on an external side of said combiner with respect to said eyepiece optical system, **figure 4 item 16**. **However Okamura is silent as to** said eyepiece in conjunction with said optical element to produce an optical power of zero, as well as said image display apparatus being positioned substantially at said second end. **Okamura in view of Hanano teaches** of said eyepiece in conjunction with said optical element for the same reasons of obviousness as applied to claims 4-6 above. **Travers et al. teaches of** a headset for the purpose of visual display that would be readily available to the skilled artisan for use in Head Mounted Display devices of Okamura in view of Hanano, given said headset represents a design choice known in the art and useful for implementing Head Mounted Display systems, figure 6.. Adding the headset of Travers et al. to the system of Okamura in view of Hanano would produce the system as claimed with the exception of said image display being placed closer to said first rotatable end. However place the image display below eye level making it closer to said second end would be an obvious design choice given such systems are known to be of use in Head Mounted Display systems. Suzuki et al. illustrates such a system wherein said image display is below eye level, figures 3, 7, & 8. **Therefore it would have been obvious to** the skilled artisan at the time of the invention to combine the hood features of Travers and Suzuki to the Head Mounted Display optical system of Okumara in view of Hanano for the purpose of

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achieving an enhanced display, because both Travers and Suzuki suggest said features are useful in such systems, as found in claim 13.

***Response to Arguments***

11. Applicant's arguments with respect to claims 1-13 have been considered but are persuasive. See the rejection over Okamura. Okamura anticipates the claimed invention as amended in claims 1, 3, and 13. Okamura teaches of a screen on which the image projected by said projection optical system is imaged, figure 4 item 7. Wherein said image is imaged on element 7 of figure 4 and reflected to the user's pupil, as claimed.

***Conclusion***

12. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.  
6011653.
13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to **David L. Lewis** whose telephone number is **(703) 306-3026**. The examiner can normally be reached on MT and THF from 8 to 5. If attempts to reach the examiner by telephone are

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unsuccessful, the examiner's supervisor, Bipin Shalwala, can be reached on (703) 305-4938. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 305-3900.

**Any response to this action should be mailed to:**

Commissioner of Patents and Trademarks  
Washington, D.C. 20231

**or faxed to:**

(703) 872-9314 (for Technology Center 2600 only)

Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Drive, Arlington, VA, Sixth Floor (Receptionist).

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Technology Center 2600 Customer Service Office whose telephone number is (703) 306-0377.



BIPIN SHALWALA  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 2600